IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

SRC LABS, LLC & SAINT REGIS MOHAWK TRIBE, Plaintiffs, v. AMAZON WEB SERVICES, INC., AMAZON.COM, INC., & VADATA, INC., Defendants.	Case No. 2:17cv547 JURY TRIAL DEMANDED

PLAINTIFFS' ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

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Plaintiffs SRC Labs, LLC and Saint Regis Mohawk Tribe file this Original Complaint for Patent Infringement ("Complaint") against Defendants Amazon Web Services, Inc., Amazon.com, Inc. and VADATA, Inc. (collectively "Defendants"). Plaintiffs allege as follows:

I. NATURE OF THE ACTION

1. This is an action for infringement of U.S. Patent Nos. 6,434,687, 7,149,867, 7,225,324, 7,620,800 and 9,153,311.

2. SRC Labs, LLC is a Texas limited liability company and its parent is the successor to SRC Computers.

3. Saint Regis Mohawk Tribe (the "Tribe") is a federally recognized, sovereign American Indian Tribe located in upstate New York.

4. Amazon.com, Inc. ("Amazon") is a Delaware corporation with its principal place of business at 410 Terry Avenue North, Seattle, Washington 98109. Amazon may be served through its registered agent for service of process at Corporation Service Company, 271 Centerville Rd., Suite 300, Wilmington, Delaware 19808.

5. Amazon Web Services, Inc. ("AWS") is a Delaware corporation headquartered at 410 Terry Avenue North, Seattle Washington 98109. AWS is a wholly-owned subsidiary of Amazon. AWS has been registered to do business in Virginia since January 25, 2013 (SCC ID F1918947). AWS's Registered Agent/Registered Office is Corporation Service Company, Bank of America Center 16th Floor, 1111 East Main Street, Richmond Virginia, 23219.

6. VADATA, Inc. ("VADATA") is a Delaware corporation with offices and employees in the Commonwealth of Virginia. VADATA is a wholly-owned subsidiary of Amazon.

VADATA's Registered Agent/Registered Office is Corporation Service Company, Bank of America Center 16th Floor, 1111 East Main Street, Richmond Virginia, 23219.

II. JURISDICTION

7. This action arises under the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*, including 35 U.S.C. §§ 271, 281, 283, 284, and 285. This is a patent infringement lawsuit, over which this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

8. This Court has general and specific personal jurisdiction over Defendants because they are present in and transact and conduct business in and with residents of this District and the Commonwealth of Virginia.

9. Plaintiffs' causes of action arise, at least in part, from Defendants' contacts with and activities in the Commonwealth of Virginia and this District.

10. In addition, upon information and belief, Defendants have committed acts of infringement within this District and this State by, *inter alia*, making, selling, offering for sale, importing, and/or using products that infringe one or more claims of the patents-in-suit.

11. Defendants, directly and through intermediaries, use, sell, ship, distributes offer for sale, and/or advertise or otherwise promote products in the Commonwealth of Virginia and this District. Defendants regularly conduct and solicit business in, engage in other persistent courses of conduct in, and/or derive substantial revenue from goods and services provided to residents of the Commonwealth of Virginia and this judicial District.

III. VENUE

12. Venue is proper in this District because Defendants meet all three general requirements relevant to the inquiry: (1) Defendants have multiple physical places in the District (2) they are

regular and established places of business and (3) the physical places belong to Defendants. *See In re Cray Inc.*, No. 2017-129, 2017 WL 4201535, at *4 (Fed. Cir. Sept. 21, 2017).

13. First, Defendants have an office within the Alexandria Division at 12900 Worldgate Drive, Herndon, Virginia. That office is home to over 500 employees that perform various functions, including engineering, customer support, security, software development, and systems engineering.

14. In addition, AWS is a provider of cloud computing services, including compute power, database storage, content delivery, and other functionality to help businesses scale and grow.

15. To provide these and other AWS services, AWS relies on a vast network of servers managed by VADATA.

16. VADATA has substantial operations and facilities within the Commonwealth of Virginia.

17. AWS and VADATA operate multiple data centers in Northern Virginia, within the Alexandria Division.

18. AWS operates one data center at 21263 Smith Switch Road, Ashburn, Virginia 20147.

19. AWS's first data centers were in Northern Virginia because it is a central region for internet backbone.

20. On April 19, 2017, AWS made the EC2 F1 instances with FPGAs "generally available in the US East (Northern Virginia) Region, with plans to bring them to other regions before too long."[1]

21. On July 22, 2016, AWS filed suit against Global Equity Management (SA) Pty. Ltd. in the Alexandria Division of the Eastern District of Virginia.[2]

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[1] https://aws.amazon.com/blogs/aws/ec2-f1-instances-with-fpgas-now-generally-available/.

22. In its complaint, AWS made the following representations:

> 2. Plaintiff AWS is a corporation organized and existing under the laws of the state of Delaware, with offices and employees throughout several of the United States, including the Commonwealth of Virginia. AWS is a wholly-owned subsidiary of Amazon.com, Inc. ("Amazon").
>
> 9. Plaintiffs have numerous large scale offices and data centers supporting AWS in the Commonwealth of Virginia with significant continued investment underway. These offices and data centers employ a large number of people in the Commonwealth. Among these employees are witnesses who may have knowledge relevant to the issues in this case, such as Kevin Miller who is a Director in EC2 Software Development.

23. Amazon, AWS, and VADATA also made the following representations to the Court in their Memorandum in Support of Motion to Enjoin Global Equity Management (SA) Pty. Ltd. from Litigating more than 30 Collateral and Identical Customer Suits in the Eastern District of Texas that was filed on November 18, 2016:[3]

> Amazon sued GEMSA in this district because of Amazon's strong connection to the commonwealth of Virginia and because the accused AWS technology is maintained and operated in numerous VADATA data centers in this district.

24. AWS's suit against Global Equity Management (SA) Pty. Ltd. the Eastern District of Virginia is currently ongoing.

25. The following people are employed by Defendants and likely have knowledge relevant to the issues in this case:

Name	**Title at AWS**	**Location**
Kevin Miller	Director of EC2 Software Development at Amazon Web Services	N. Virginia
Chris Gorski	Solutions Architect – Big Data/Open Data	N. Virginia
Mike Grella	Director of Economic Development and Global	N. Virginia

[2] Case No. 3:16-cv-00619.

[3] *Amazon Web Services, Inc. & VADATA, Inc. v. Global Equity Management, S.A.*, No. 3:16-cv-619-MHL, Dkt. 26 at 5 (E.D. Va. Nov. 11, 2016).

	expansion	
Mark Ryland	Director of Solutions Architecture/Chief Solutions Architect	N. Virginia
Scott Solomon	Data Center Engineer at Amazon Web Services	N. Virginia
Andrew Doane	Director, Security Services at Amazon Web Services	N. Virginia
David Levine	Data Center Technician at Amazon Web Services	N. Virginia
Jennifer Nelson	Senior Sales Manager at Amazon Web Services	N. Virginia
David Cruley	Senior Solution Architect at Amazon Web Services	N. Virginia
Joe Soricelli	Global Solutions Architect at Amazon Web Services	N. Virginia
Steven Baber	Solutions Architect at Amazon Web Services	N. Virginia
Doug Knowles	Partner Sales Manager at Amazon Web Service	N. Virginia
Tarun Verma	Global Solutions Product Manager at Amazon Web Services	N. Virginia
Robert Johnson	Architecture and Software, Silicon optimization at Amazon Web Services	Austin, TX
David Borland	Director of Silicon Optimizations at Amazon Web Services	Austin, TX
Mark Davis	Principal Engineer, Silicon Optimization at Amazon Web Services	Austin, TX
Danny Marquette	Manager of Hardware Engineering, Silicon Optimizations at Amazon Web Services	Austin, TX
Trey Bachmayer	Hardware Development Engineer, Silicon Optimization at Amazon Web Services	Austin, TX
Dan Grossman	Vice President of Worldwide Corporate Development	Seattle, WA
Matt Wilson	Sr. Principal Engineer, EC2 at Amazon Web Services	Seattle, WA
Atul Deo	Corporate Development at Amazon	Seattle, WA
Cliff Platt	Principal, Venture Capital Business Development at AWS	Seattle, WA
Andrew Caldwell	Senior Principal Engineer at AWS	Palo Alto, CA
Nafea Bshara	Vice President/Distinguished Engineer at AWS	Palo Alto, CA

26. In addition, these third-party witnesses likely have relevant knowledge:

Name	**Title**	**Location**
Nicholas Wilt	Software Architect at Jump Trading LLC	New York, NY

27. Defendants also operate three fulfillment centers in the Commonwealth located in Chester, Petersburg, and Sterling, the latter of which is located within the Alexandria Division.

28. These fulfillment centers employ more than 3,500 full-time people in the Commonwealth.

29. In summary, Defendants have multiple physical locations that are regular and established places of business within this District and within the Alexandria Division so venue is proper under 28 U.S.C. § 1400(b).

IV. THE PARTIES

A. Saint Regis Mohawk Tribe

30. The Saint Regis Mohawk Tribe is a federally-recognized, sovereign American Indian tribe with reservation lands in northern New York.

31. By filing this lawsuit, the Tribe has not expressly or impliedly waived its sovereign immunity to any *inter partes* review proceeding involving the patents asserted in this case or any other patent assigned to the Tribe.

32. The Tribe's reservation was established by a federal treaty approved and ratified by the United States.

33. The Tribe's current reservation constitutes 14,000 acres spanning Franklin and St. Lawrence counties.

34. The Tribe has over 15,600 enrolled tribal members, with approximately 8,000 tribal members living on the reservation.

35. The Tribe provides essential government functions such as education, policing, infrastructure, housing services, social services, and healthcare. See https://www.srmt-nsn.gov/about-the-tribe.

36. But unlike other sovereign governments, the Tribe's ability to raise revenues through taxation is extremely limited.

37. This is a problem faced by all American Indian Tribes as described by the National Congress of American Indians ("NCAI"):

> In general, tribal governments lack parity with states, local governments, and the federal government in exercising taxing authority. For example, tribes are unable to levy property taxes because of the trust status of their land, and they generally do not levy income taxes on tribal members. Most Indian reservations are plagued with disproportionately high levels of unemployment and poverty, not to mention a severe lack of employment opportunities. As a result, tribes are unable to establish a strong tax base structured around the property taxes and income taxes typically found at the local state government level. To the degree that they are able, tribes use sales and excise taxes, but these do not generate enough revenue to support tribal government functions.

38. Because of these disparities, a significant portion of the revenue the Tribe uses to provide basic governmental services must come from economic development and investment rather than taxes or financing.

39. To overcome these economic disadvantages, the Tribe took steps to diversify its economy with investments in innovative businesses and various enterprises to foster jobs and entrepreneurship.

40. Looking to the business model already utilized by state universities and their technology transfer offices, the Tribe adopted a Tribal Resolution endorsing the creation of a technology and innovation center for the commercialization of existing and emerging technologies.

41. This new Tribal enterprise is called the Office of Technology, Research and Patents (the "Office") and is part of the Tribe's Economic Development Department. *See* https://www.srmt-nsn.gov/economic-development.

42. The Office's purpose is to strengthen the Tribal economy by encouraging the development of emerging science and technology initiatives and projects, and promoting the modernization of Tribal and other businesses.

43. The objective of the Office is to create revenue, jobs, and new economic development opportunities for the Tribe and its members.

44. The Office will also promote the education of Mohawks in the fields of science, technology, engineering, and math.

B. SRC Labs

45. SRC Computers, LLC was co-founded by Seymour R. Cray (hence "SRC"), Jim Guzy, and Jon Huppenthal in 1996 to produce unique high-performance computer systems using Intel's Merced microprocessor.

46. SRC Labs, LLC's parent company is the successor to SRC Computers.

47. Jim Guzy is a co-founder of Intel Corporation and served on Intel's board for 38 years.

48. Mr. Guzy was named to Forbes Midas List, which surveys the top tech deal makers in the world, in 2006 and 2007.

49. Seymour Cray was an American electrical engineer and supercomputer architect who designed a series of computers that were the fastest in the world for decades.

50. Mr. Cray has been credited with creating the supercomputing industry.

51. Unfortunately, Mr. Cray died shortly after founding of SRC Computers.

52. But his legacy was carried on by Jon Huppenthal and a talented team of engineers that worked with Mr. Cray and Mr. Huppenthal for decades.

53. SRC Computers' focus was creating easy-to-program, general-purpose reconfigurable computing systems.

54. In early 1997, Mr. Huppenthal and his team realized that the microprocessors of the day had many shortcomings relative to the custom processing engines that they were used to.

55. As a result, they decided to incorporate dedicated processing elements built from Field Programmable Gate Arrays ("FPGAs") and that idea quickly evolved into a novel system combining reconfigurable processors and CPUs.

56. SRC Computers' heterogenous system had 100x performance, $1/50^{th}$ of the operating expense, $1/100^{th}$ of the power usage, and required $1/500^{th}$ of the space of more traditional computer systems.

57. SRC Computers' proven systems are used for some of the most demanding military and intelligence applications, including the simultaneous real-time processing and analysis of radar, flight and mission data collected from a variety of aerial vehicles in over 1,000 successful counter-terrorism and counter-insurgency missions for the U.S. Department of Defense.

58. SRC Computers offered its first commercial product in 2015 called the Saturn 1 server.

59. The Saturn 1 was 100 times faster than a server with standard Intel microprocessors while using 1 percent of the power.

60. The Saturn 1 was designed to be used in HP's Moonshot server chassis for data centers.

61. SRC Computers has had over 30 U.S. patents issued for its innovative technology.

62. SRC Computers' patent portfolio covers numerous aspects of reconfigurable computing and has more than 1,800 forward citations.

C. Defendants' Elastic Compute Cloud (EC2).

63. Defendants offer a service named Elastic Compute Cloud or EC2.

64. EC2 was designed and developed by AWS.

65. EC2 is a web service designed to make web-scale cloud computing easier for developers.

66. EC2 allows users to rent virtual computers to run their own computer applications providing them with flexibility to use the computing resources they need without incurring sunk costs in expensive hardware.

67. On November 30, 2016, AWS announced it was launching a new EC2 instance type called the F1.

68. The EC2 F1 instances incorporate Field Programmable Gate Arrays (FPGAs).

69. The EC2 F1 was originally only available in the AWS's US East region and was recently also made available in the US West (Oregon) and EU (Ireland) regions.

70. AWS's US East region servers are in the Commonwealth of Virginia.

71. In contrast to a purpose-built chip which is designed with a single function in mind and then hard-wired to implement it, an FPGA is more flexible.

72. An FPGA can be programmed in the field, after it has been plugged into a socket on a PC board.

73. Each FPGA includes a fixed, finite number of simple logic gates.

74. Programming an FPGA is "simply" a matter of connecting them up to create the desired logical functions (AND, OR, XOR, and so forth) or storage elements (flip-flops and shift registers).

75. Unlike a CPU which is essentially serial (with a few parallel elements) and has fixed-size instructions and data paths (typically 32 or 64 bit), the FPGA can be programmed to perform many operations in parallel, and the operations themselves can be of almost any width, large or small.

76. The highly parallelized model in FPGAs is ideal for building custom accelerators to process compute-intensive problems.

77. Properly programmed, an FPGA has the potential to provide a 30x speedup to many types of genomics, seismic analysis, financial risk analysis, big data search, and encryption algorithms and applications.

78. Defendants offer two instances sizes of EC2 F1 that include up to eight FPGAs per instance.

79. F1 instances include 16nm Xilinx UltraScale Plus FPGA.

80. F1 instances include Intel Broadwell E5 2686 v4 processors.

81. F1 instances include 64 GiB of ECC-protected memory on a 288-bit wide bus (4 DDR4 channels).

82. F1 instances include a dedicated PCIe x16 interface to the CPU.

83. Each FPGA used in the Amazon EC2 F1 instance contains approximately 2.5 million logic elements and approximately 6,800 Digital Signal Processing (DSP) engines.

84. Each FPGA used in the Amazon EC2 F1 instance includes local 64 GiB DDR ECC protected memory, with a dedicated PCle x16 connection.

85. Customers pay for EC2 F1 compute capacity by the hour with no long-term commitments or upfront payments.

86. Customers can program the FPGA on their F1 instance as many times as they like with no additional fees.

87. FPGAs are connected to customer's F1 instances through a dedicated PCI Express (PCIe) fabric that lets FPGAs share the same memory space and communicate with each other at up to 12 GBps.

88. The PCI Express fabric is isolated from other networks and FPGAs are not shared across instances, users, or accounts.

89. Defendants' customers can use FPGAs to accelerate their applications more than 30x when compared with servers that use CPUs alone.

90. The speed increase is a result of the FPGAs handling compute-intensive, deeply pipelined, hardware-accelerated operations, which also allows for highly parallelized computing.

91. AWS provides the FPGA Developer Amazon Machine Image ("AMI").

92. An AMI is an encrypted machine image stored in Amazon Elastic Block Store or Amazon Simple Storage Service.

93. AMIs are like a template of a computer's root drive.

94. AMIs contain the operating system and can also include software and layers of your application, such as database servers, middleware, web servers, and so on.

95. Defendants' FPGA Developer AMI is pre-built with FPGA development tools and run time tools required to develop and use custom FPGAs for hardware acceleration.

96. The FPGA developer AMI includes a prepackaged tool development environment, with scripts and tools for simulating your FPGA design, compiling code, building and registering your AFI (Amazon FPGA Image).

97. Developers can deploy the FPGA developer AMI on an Amazon EC2 instance and quickly provision the resources they need to write and debug FPGA designs in the cloud.

98. The FPGA developer AMI is designed to provide a stable, secure, and high-performance development environment.

99. The FPGA developer AMI allows customers to write FPGA code using VHDL or Verilog and then compile, simulate, and verify it using tools from the Xilinx Vivado Design Suite.

100. AWS also allows its customers to use High Level Synthesis tools, including OpenCL, to program FPGAs.

101. In addition to building applications and services for their own use, customers can also package their applications and services up for sale and reuse in the AWS Marketplace.

102. Amazon EC2 F1 Instance Partners include Aldec, Inc., Aon Benfield, Atomic Rules, CME Group, Edico Genome, Falcon Computing Solutions, Mipsology, National Instruments, NGCodec, Reconfigure.io, Ryft, Teradeep, Maxeler Technologies, Missing Link Electronics, Titan IC Systems, and Plunify.

V. DEFENDANTS RECEIVED ACTUAL AND CONSTRUCTIVE NOTICE

103. SRC complied with 35 U.S.C. § 287 by (i) placing the required notice on all, or substantially all, of its products made, offered for sale, sold, or imported into the United States, or (ii) providing actual notice to Defendants.

A. Constructive Notice to Defendants.

104. For example, SRC has placed the following notice on all, or substantially all, of its products since at least September 30, 2010:[4]

[4] https://web.archive.org/web/20100930014237/http://www.srccomp.com/techpubs/patentedtech.asp.

SRC®
SRC COMPUTERS, LLC
PATENT WWW.SRCCOMP.COM/TECHPUBS/PATENTEDTECH.ASP
U101

105. The website listed in the notice, WWW.SRCCOMP.COM/ TECHPUBS/PATENTEDTECH.ASP, stated the following:

SRC® PATENTED TECHNOLOGY

SRC Computers holds fundamental U.S. and foreign patents covering hardware and software techniques for vastly accelerating data processing through the use of reconfigurable elements comprising one or more Direct Execution Logic blocks operating in conjunction with one or more commodity microprocessors.

SRC patented technology, with filing dates back to 1997, also includes a number of general applications of Direct Execution Logic computing systems for parallelizing the execution of user-defined algorithms including acceleration of web site access and processing.

SRC Computers has exclusive rights to the following patents:

106. The website also listed at least the following patents since September 30, 2010. The patents asserted in this case are highlighted:

Patent #	Patent Title

6,026,459	System and method for dynamic priority conflict resolution in a multi-processor computer system having shared memory resources
6,076,152	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,247,110	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,295,598	Split directory-based cache coherency technique for a multi-processor computer system
6,339,819	Multiprocessor with each processor element accessing operands in loaded input buffer and forwarding results to FIFO output buffer
6,434,687	System and method for accelerating web site access and processing utilizing a computer system incorporating reconfigurable processors operating under a single operating system image
6,356,983	System and method providing cache coherency and atomic memory operations in a multiprocessor computer architecture
6,594,736	System and method for semaphore and atomic operation management in a multiprocessor
6,627,985	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
6,781,226	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
6,836,823	Bandwidth enhancement for uncached devices
6,941,539	Efficiency of reconfigurable hardware
6,961,841	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
6,964,029	System and method for partitioning control-dataflow graph representations
6,983,456	Process for converting programs in high-level programming languages to a unified executable for hybrid computing platforms
6,996,656	System and method for providing an arbitrated memory bus in a hybrid computing system
7,003,593	Computer system architecture and memory controller for close-coupling within a hybrid processing system utilizing an adaptive processor interface port
7,124,211	System and method for explicit communication of messages between processes running on different nodes in a clustered multiprocessor system
7,126,214	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
7,134,120	Map compiler pipelined loop structure

7,149,867	System and method of enhancing efficiency and utilization of memory bandwidth in reconfigurable hardware
7,155,602	Interface for integrating reconfigurable processors into a general purpose computing system
7,155,708	Debugging and performance profiling using control-dataflow graph representations with reconfigurable hardware emulation
7,167,976	Interface for integrating reconfigurable processors into a general purpose computing system
7,197,575	Switch/network adapter port coupling a reconfigurable processing element to one or more microprocessors for use with interleaved memory controllers
7,225,324	Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions
7,237,091	Multiprocessor computer architecture incorporating a plurality of memory algorithm processors in the memory subsystem
7,282,951	Reconfigurable processor module comprising hybrid stacked integrated circuit die elements
7,299,458	System and method for converting control flow graph representations to control-dataflow graph representations
7,373,440	Switch/network adapter port for clustered computers employing a chain of multi-adaptive processors in a dual in-line memory module format
7,406,573	Reconfigurable processor element utilizing both coarse and fine grained reconfigurable elements
7,421,524	Switch/network adapter port for clustered computers employing a chain of multi-adaptive processors in a dual in-line memory module format
7,424,552	Switch/network adapter port incorporating shared memory resources selectively accessible by a direct execution logic element and one or more dense logic devices
7,565,461	Switch/network adapter port coupling a reconfigurable processing element to one or more microprocessors for use with interleaved memory controllers
7,620,800	Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions

B. Actual Notice to Defendants.

107. In 2015, SRC and Defendants met four times to discuss SRC's patent portfolio and technology.

108. The first meeting was on May 12, 2015 in Seattle and was attended by the following individuals from Defendants:

(a) Dan Grossman, the VP of Worldwide Corporate Development at Amazon; and

(b) Cliff Platt, a senior manager of Corporate Development at AWS.

109. The second meeting was on June 5, 2015 in San Jose and was attended by Nafea Bshara who is a Vice President and Distinguished Engineer at AWS.

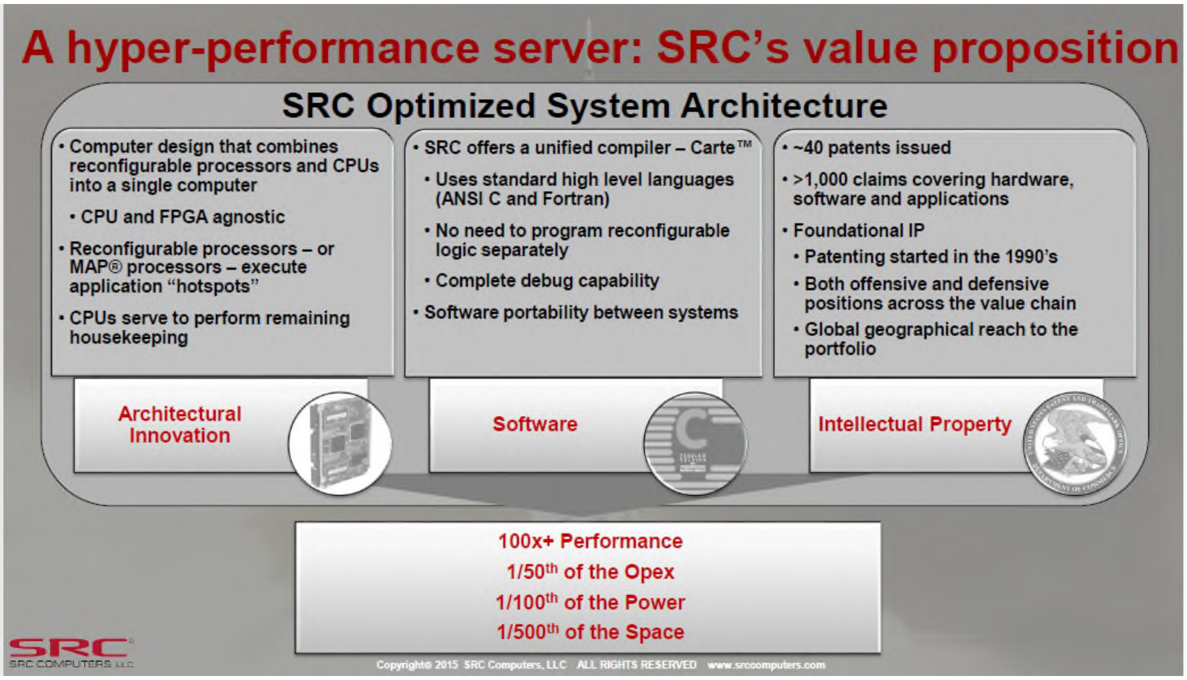
110. The third meeting was on July 1, 2015 in Seattle and was attended by the following individuals from Defendants:

(a) Matt Wilson, a Senior Principal Systems Engineer for EC2;

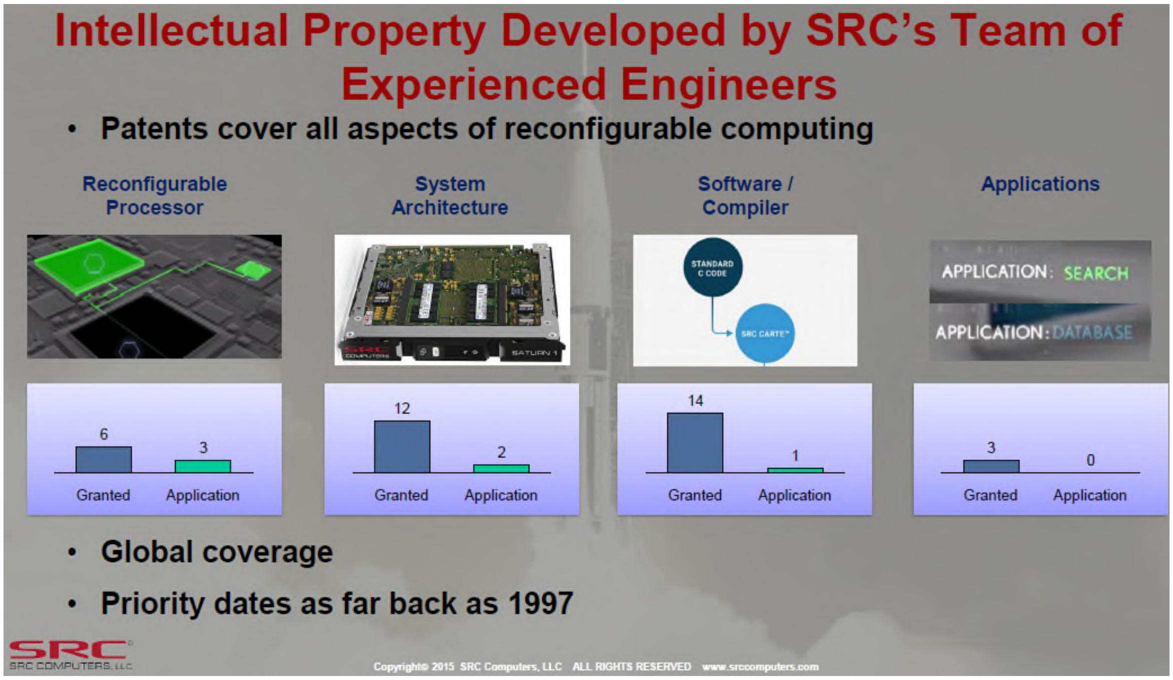
(b) Nicholas Wilt, a Principal Software Development Engineer; and

(c) Atul Deo, Corporate Development.

111. At the meeting, Jon Huppenthal presented for SRC and explained the value proposition of its hyper-performance system architecture:


A hyper-performance server: SRC's value proposition
SRC Optimized System Architecture
• Computer design that combines reconfigurable processors and CPUs into a single computer
• CPU and FPGA agnostic
• Reconfigurable processors – or MAP® processors – execute application "hotspots"
• CPUs serve to perform remaining housekeeping
• SRC offers a unified compiler – Carte™
• Uses standard high level languages (ANSI C and Fortran)
• No need to program reconfigurable logic separately
• Complete debug capability
• Software portability between systems
• ~40 patents issued
• >1,000 claims covering hardware, software and applications
• Foundational IP
• Patenting started in the 1990's
• Both offensive and defensive positions across the value chain
• Global geographical reach to the portfolio
Architectural Innovation
Software
Intellectual Property
100x+ Performance
1/50th of the Opex
1/100th of the Power
1/500th of the Space
SRC
SRC COMPUTERS LLC
Copyright© 2015 SRC Computers, LLC ALL RIGHTS RESERVED www.srccomputers.com

112. SRC Computers also emphasized the strength of its patent portfolio, telling Amazon that its portfolio covers many different aspects of reconfigurable computing.



Intellectual Property Developed by SRC's Team of Experienced Engineers
• Patents cover all aspects of reconfigurable computing
Reconfigurable Processor
System Architecture
Software / Compiler
Applications
STANDARD C CODE
APPLICATION: SEARCH
APPLICATION: DATABASE
6
3
Granted
Application
12
2
Granted
Application
14
1
Granted
Application
3
0
Granted
Application
• Global coverage
• Priority dates as far back as 1997
SRC
SRC COMPUTERS, LLC
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113. The fourth, and final, meeting was on July 28, 2015 in Palo Alto and was attended by Andrew Caldwell—a Senior Principal Engineer at AWS with expertise in compilers and ASIC/FPGA technologies.

114. Before the fourth meeting, Amazon sent the following questions to SRC:

Questions From Amazon:

1. Describe the programming model (provide context on the reference C/C++ library code that SRC accelerated, view on performance pre- and post-acceleration)
2. How does SRC determine which workloads are directed toward the CPU vs the FPGA?
3. For the FPGA bits, does SRC 'compile' to an HDL, which is then directed through the FPGA tool flow, or are pre-canned modules (e.g. SP&Rd) utilized?
4. How does SRC handle performance debug?
5. How does SRC handle functional debug for the portions of the program that end up in the FPGA?
6. What is the transition time from one 'program' to the next? Is SRC leveraging FPGA hot-reconfig?
7. Please describe any potential performance impacts based on choice of FPGA vendor. Is there a particular FPGA that works most effectively?
8. How does SRC handle I/O? How do FPGA I/O rates and power consumption compare to dedicated devices?

115. At the meeting, SRC provided detailed answers to all of Amazon's questions.

116. Just a little over a year after these meetings, Amazon announced its own infringing reconfigurable computing product called the EC2 F1 Instance.

VI. THE PATENTS

A. All Asserted Patents are owned by the Tribe and Licensed by SRC.

117. On August 1, 2017, all the patents asserted in this case were assigned to the Tribe.

118. The assignment was recorded at the USPTO on August 2, 2017.

119. The Tribe subsequently entered into an Exclusive License Agreement with Right to Sublicense with SRC that granted SRC the right to practice the patents and sue third-parties for past, present, and future infringement.

120. All maintenance fees have been paid to the USPTO to keep all the patents in suit enforceable for their full term.

B. Description of the Asserted Patents.

1. U.S. Patent 6,434,687 (the "'687 patent").

121. The '687 patent is entitled "System and method for accelerating web site access and processing utilizing a computer system incorporating reconfigurable processors operating under a single operating system image" and issued on August 13, 2002.

122. A true and correct copy of the '687 patent is attached as **Exhibit A**.

123. The '687 patent is valid and enforceable.

2. U.S. Patent 7,149,867 (the "'867 patent").

124. The '867 patent is entitled "System and method of enhancing efficiency and utilization of memory bandwidth in reconfigurable hardware" and issued on December 12, 2006.

125. A true and correct copy of the '867 patent is attached as **Exhibit B**.

126. The '867 patent is valid and enforceable.

3. U.S. Patent 7,225,324 (the "'324 patent").

127. The '324 patent is entitled "Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions" and issued on May 29, 2007.

128. A true and correct copy of the '324 patent is attached as **Exhibit C**.

129. The '324 patent is valid and enforceable.

4. U.S. Patent 7,620,800 (the "'800 patent").

130. The '800 patent is entitled "Multi-adaptive processing systems and techniques for enhancing parallelism and performance of computational functions" and issued on November 17, 2009.

131. A true and correct copy of the '800 patent is attached as **Exhibit D**.

132. The '800 patent is valid and enforceable.

5. U.S. Patent 9,153,311 (the "'311 patent").

133. The '311 patent is entitled "System and method for retaining DRAM data when reprogramming reconfigurable devices with DRAM memory controllers" and issued on October 6, 2015.

134. A true and correct copy of the '311 patent is attached as **Exhibit E**.

135. The '311 patent is valid and enforceable.

VII. COUNT ONE: DIRECT INFRINGEMENT OF THE '687 PATENT

136. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

137. Defendants have at no time, either expressly or impliedly, been licensed under the '687 patent.

138. Defendants have been and continue to directly infringe claims 1 and 18 of the '687 patent by making, using, offering for sale, and selling in the United States in violation of 35 U.S.C. § 271(a) their EC2 F1 Instance, as shown in **Exhibit F**.[5]

139. Defendants' direct infringement of the '687 patent has caused, and will continue to cause, substantial and irreparable damage to Plaintiffs. Plaintiffs are therefore entitled to an award of damages adequate to compensate for Defendants' infringement, but not less than a

[5] This chart is exemplary of all AWS and third-party web services that utilize EC2 F1 Instances.

reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

VIII. COUNT TWO: INDIRECT INFRINGMENT OF '687 PATENT

140. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

141. Defendants induce infringement under 35 U.S.C. § 271(b) by actively and knowingly aiding and abetting the direct infringement of at least the following companies: Aldec, Inc., Aon Benfield, Atomic Rules, CME Group, Edico Genome, Falcon Computing Solutions, Mipsology, National Instruments, NGCodec, Reconfigure.io, Ryft, Teradeep, Maxeler Technologies, Missing Link Electronics, Titan IC Systems, and Plunify.

142. Defendants induce infringement of the '687 patent by marketing its infringing EC2 F1 Instance and providing detailed documentation explaining how to use the EC2 F1 Instance in ways that infringe the '687 patent.

143. Defendants further induce infringement by providing its customers with an FPGA Developer AMI and Hardware Developer Kit that allow them to develop, simulate, debug, and compile hardware acceleration code.

144. Defendants also provide numerous infringing Use Cases for its EC2 F1 Instances to further induce direct infringement by its customers.

145. None of the above listed entities have ever been expressly or impliedly licensed under the '687 patent.

IX. COUNT THREE: WILLFUL INFRINGEMENT OF THE '687 PATENT

146. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

147. Defendants have been willfully infringing the '687 patent since November 2016 when they launched the EC2 F1 Instance.

148. Defendants acquired actual knowledge of the ’687 patent at their July 2015 meetings with SRC.

149. Defendants have continued making, using, offering for sale, and selling their EC2 F1 Instance despite an objectively high likelihood that their actions infringe claims 1 and 18 of the ’687 patent.

150. Defendants’ actions have not been consistent with the standards of behavior in its industry.

151. Defendants blatantly and intentionally copied the inventions disclosed in the ’687 patent after meeting with SRC in July 2015.

152. And Defendants made no effort to avoid infringing the ’687 patent.

153. Defendants did not obtain an opinion of counsel concerning their infringement of the ’687 patent or the validity of the ’687 patent before launching their EC2 F1 Instance.

154. Therefore, Plaintiffs should receive enhanced damages up to three times the amount of actual damages for Defendants’ willful infringement under 35 U.S.C. § 284.

X. COUNT FOUR: DIRECT INFRINGMENT OF THE ’867 PATENT

155. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

156. Defendants have at no time, either expressly or impliedly, been licensed under the ’867 patent.

157. Defendants have been and continue to directly infringe claims 1, 3, and 4 of the ’867 patent by making, using, offering for sale, and selling in the United States in violation of 35 U.S.C. § 271(a) their EC2 F1 Instance, as shown in **Exhibit G**.[6]

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[6] This chart is exemplary of all AWS and third-party web services that utilize EC2 F1 Instances.

158. Defendants' direct infringement of the '867 patent has caused, and will continue to cause, substantial and irreparable damage to Plaintiffs. Plaintiffs are therefore entitled to an award of damages adequate to compensate for Defendants' infringement, but not less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

XI. COUNT FIVE: WILLFUL INFRINGEMENT OF THE '867 PATENT

159. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

160. Defendants have been willfully infringing the '867 patent since November 2016 when they launched the EC2 F1 Instance.

161. Defendants acquired actual knowledge of the '867 patent at their July 2015 meetings with SRC.

162. Defendants have continued making, using, offering for sale, and selling their EC2 F1 Instance despite an objectively high likelihood that their actions infringe claims 1, 3, and 4 of the '867 patent.

163. Defendants' actions have not been consistent with the standards of behavior in its industry.

164. Defendants blatantly and intentionally copied the inventions disclosed in the '867 patent after meeting with SRC in July 2015.

165. And Defendants made no effort to avoid infringing the '867 patent.

166. Defendants did not obtain an opinion of counsel concerning their infringement of the '867 patent or the validity of the '867 patent before launching their EC2 F1 Instance.

167. Therefore, Plaintiffs should receive enhanced damages up to three times the amount of actual damages for Defendants' willful infringement under 35 U.S.C. § 284.

XII. COUNT SIX: DIRECT INFRINGMENT OF THE '324 PATENT

168. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

169. Defendants have at no time, either expressly or impliedly, been licensed under the '324 patent.

170. Defendants have been and continue to directly infringe claims 1 and 17 of the '324 patent by making, using, offering for sale, and selling in the United States in violation of 35 U.S.C. § 271(a) their EC2 F1 Instance, as shown in **Exhibit H**.[7]

171. Defendants' direct infringement of the '324 patent has caused, and will continue to cause, substantial and irreparable damage to Plaintiffs. Plaintiffs are therefore entitled to an award of damages adequate to compensate for Defendants' infringement, but not less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

XIII. COUNT SEVEN: INDIRECT INFRINGEMENT OF THE '324 PATENT

172. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

173. Defendants induce infringement under 35 U.S.C. § 271(b) by actively and knowingly aiding and abetting the direct infringement of at least the following companies: Aldec, Inc., Aon Benfield, Atomic Rules, CME Group, Edico Genome, Falcon Computing Solutions, Mipsology, National Instruments, NGCodec, Reconfigure.io, Ryft, Teradeep, Maxeler Technologies, Missing Link Electronics, Titan IC Systems, and Plunify.

174. Defendants induce infringement of the '324 patent by marketing its infringing EC2 F1 Instance and providing detailed documentation explaining how to use the EC2 F1 Instance in ways that infringe the '324 patent.

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[7] This chart is exemplary of all AWS and third-party web services that utilize EC2 F1 Instances.

175. Defendants further induce infringement by providing its customers with an FPGA Developer AMI and Hardware Developer Kit that allow them to develop, simulate, debug, and compile hardware acceleration code.

176. Defendants also provide numerous infringing Use Cases for its EC2 F1 Instances to further induce direct infringement by its customers.

177. None of the above listed entities have ever been expressly or impliedly licensed under the ’324 patent.

XIV. COUNT EIGHT: WILLFUL INFRINGEMENT OF THE ’324 PATENT

178. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

179. Defendants have been willfully infringing the ’324 patent since November 2016 when they launched the EC2 F1 Instance.

180. Defendants acquired actual knowledge of the ’324 patent at their July 2015 meetings with SRC.

181. Defendants have continued making, using, offering for sale, and selling their EC2 F1 Instance despite an objectively high likelihood that their actions infringe claims 1 and 17 of the ’324 patent.

182. Defendants blatantly and intentionally copied the inventions disclosed in the ’324 patent after meeting with SRC in July 2015.

183. And Defendants made no effort to avoid infringing the ’324 patent.

184. Defendants did not obtain an opinion of counsel concerning their infringement of the ’324 patent or the validity of the ’324 patent before launching their EC2 F1 Instance.

185. Therefore, Plaintiffs should receive enhanced damages up to three times the amount of actual damages for Defendants’ willful infringement under 35 U.S.C. § 284.

XV. COUNT NINE: DIRECT INFRINGMENT OF THE ’800 PATENT

186. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

187. Defendants have at no time, either expressly or impliedly, been licensed under the ’800 patent.

188. Defendants have been and continue to directly infringe claims 1 and 17 of the ’800 patent by making, using, offering for sale, and selling in the United States in violation of 35 U.S.C. § 271(a) their EC2 F1 Instance, as shown in **Exhibit I**.[8]

189. Defendants’ direct infringement of the ’800 patent has caused, and will continue to cause, substantial and irreparable damage to Plaintiffs. Plaintiffs are therefore entitled to an award of damages adequate to compensate for Defendants’ infringement, but not less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

XVI. COUNT TEN: INDIRECT INFRINGEMENT OF THE ’800 PATENT

190. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

191. Defendants induce infringement under 35 U.S.C. § 271(b) by actively and knowingly aiding and abetting the direct infringement of at least the following companies: Aldec, Inc., Aon Benfield, Atomic Rules, CME Group, Edico Genome, Falcon Computing Solutions, Mipsology, National Instruments, NGCodec, Reconfigure.io, Ryft, Teradeep, Maxeler Technologies, Missing Link Electronics, Titan IC Systems, and Plunify.

192. Defendants induce infringement of the ’800 patent by marketing its infringing EC2 F1 Instance and providing detailed documentation explaining how to use the EC2 F1 Instance in ways that infringe the ’800 patent.

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[8] This chart is exemplary of all AWS and third-party web services that utilize EC2 F1 Instances.

193. Defendants further induce infringement by providing its customers with an FPGA Developer AMI and Hardware Developer Kit that allow them to develop, simulate, debug, and compile hardware acceleration code.

194. Defendants also provide numerous infringing Use Cases for its EC2 F1 Instances to further induce direct infringement by its customers.

195. None of the above listed entities have ever been expressly or impliedly licensed under the ’800 patent.

XVII. COUNT ELEVEN: WILLFUL INFRINGEMENT OF THE ’800 PATENT

196. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

197. Defendants have been willfully infringing the ’800 patent since November 2016 when they launched the EC2 F1 Instance.

198. Defendants acquired actual knowledge of the ’800 patent at their July 2015 meetings with SRC.

199. Defendants have continued making, using, offering for sale, and selling their EC2 F1 Instance despite an objectively high likelihood that their actions infringe claims 1 and 17 of the ’800 patent.

200. Defendants blatantly and intentionally copied the inventions disclosed in the ’800 patent after meeting with SRC in July 2015.

201. And Defendants made no effort to avoid infringing the ’800 patent.

202. Defendants did not obtain an opinion of counsel concerning their infringement of the ’800 patent or the validity of the ’800 patent before launching their EC2 F1 Instance.

203. Therefore, Plaintiffs should receive enhanced damages up to three times the amount of actual damages for Defendants’ willful infringement under 35 U.S.C. § 284.

XVIII. COUNT TWELVE: DIRECT INFRINGMENT OF THE '311 PATENT

204. Plaintiffs incorporate by reference all paragraphs above as though set forth herein.

205. Defendants have at no time, either expressly or impliedly, been licensed under the '311 patent.

206. Defendants have been and continue to directly infringe claims 1, 3, 9 and 10 of the '311 patent by making, using, offering for sale, and selling in the United States in violation of 35 U.S.C. § 271(a) their EC2 F1 Instance, as shown in **Exhibit J**.[9]

207. Defendants' direct infringement of the '311 patent has caused, and will continue to cause, substantial and irreparable damage to Plaintiffs. Plaintiffs are therefore entitled to an award of damages adequate to compensate for Defendants' infringement, but not less than a reasonable royalty, together with pre- and post-judgment interest and costs as fixed by the Court under 35 U.S.C. § 284.

XIX. JURY DEMAND

208. Plaintiffs hereby demand a trial by jury for all causes of action.

XX. PRAYER FOR RELIEF

Plaintiff requests the following relief:

A. A judgment that Defendants have infringed and continue to infringe the '687, '867, '324, '800, and '311 patents;

B. A judgment and order requiring the Defendants to pay Plaintiffs damages under 35 U.S.C. § 284, including treble damages for willful infringement as provided by 35 U.S.C. § 284, and supplemental damages for any continuing post-verdict infringement up until entry of the final judgment with an accounting as needed;

[9] This chart is exemplary of all AWS and third-party web services that utilize EC2 F1 Instances.

C. A judgment and order requiring Defendants to pay Plaintiffs pre-judgment and post-judgment interest on the damages awarded;

D. A judgment and order awarding a compulsory on-going royalty; and

E. Such other and further relief as the Court deems just and equitable.

DATED: October 18, 2017

/s/________________
L. Lee Byrd, Virginia Bar No. 28662
lbyrd@sandsanderson.com
Madelaine A. Kramer, Virginia Bar No. 82305
mkramer@sandsanderson.com

SANDS ANDERSON PC
1497 Chain Bridge Road, Suite 202
McLean, Virginia 22101
Telephone: (703) 893-3600
Facsimile: (703) 893-8484

Michael W. Shore, Texas Bar No. 18294915*
mshore@shorechan.com
Alfonso Garcia Chan, Texas Bar No. 24012408*
achan@shorechan.com
Christopher L. Evans, Texas Bar No.24058901*
cevans@shorechan.com
Andrew M. Howard, Texas Bar No. 24059973*
ahoward@shorechan.com

SHORE CHAN DePUMPO LLP
901 Main Street, Suite 3300
Dallas, Texas 75202
Telephone: 214-593-9110
Facsimile: 214-593-9111
* Appliction for *pro hac vice* admission to be filed

ATTORNEYS FOR PLAINTIFFS
SRC LABS, LLC AND
SAINT REGIS MOHAWK TRIBE